



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,524	01/30/2006	Mamoru Arayashiki	NGB-39582	7126
52054	7590	05/06/2009	EXAMINER	
PEARNE & GORDON LLP			AKINYEMI, AJIBOLA A	
1801 EAST 9TH STREET				
SUITE 1200			ART UNIT	PAPER NUMBER
CLEVELAND, OH 44114-3108			2618	
			NOTIFICATION DATE	DELIVERY MODE
			05/06/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patdocket@pearne.com  
dchervenak@pearne.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/566,524 Examiner AJIBOLA AKINYEMI	ARAYASHIKI ET AL. Art Unit 2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 April 2009.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-8 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 01/30/2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/15/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Sahlman (Patent No.: US 6002923) and Sander (Pub. No.: US 2005/0048935A1).

With respect to claims 1:

Heinonen teaches a transmitting apparatus/method (fig.1) that power- amplifies a transmitting signal, the apparatus comprising transmitting power amplifying means (fig.1, item 10, 12) having a high- frequency power amplifier , wherein the transmitting power amplifying means has a first mode of operating the high- frequency power amplifier as a nonlinear amplifier (col. 4, line 12-25) and a second mode of operating the high- frequency power amplifier as a linear amplifier (col. 4, line 23-39), and in the first mode, amplitude modulates the transmitting signal and controls an average output level of the transmitting signal by a power supply voltage of the high- frequency power amplifier (col.4, line 12-25) and, in the second mode, controls an average output level of the transmitting signal before the high- frequency power amplifier and amplitude modulates the transmitting signal having the average output level controlled (col.3, line 61-col.4,line56). Heinonen did not disclose an amplitude modulated signal amplifier for selectively (i) supplying a substantially constant power supply voltage to the high-frequency amplifier in the second mode and (II) amplifying and supplying an amplified amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode and a multiplier for generating a multiplied signal to be transmitted to the high frequency power amplifier by multiplying a phase modulated signal by an amplitude modulated signal. Sander discloses a method of amplitude

modulated signal amplifier for selectively (i) supplying a substantially constant power supply voltage to the high-frequency amplifier in the second mode and (II) amplifying and supplying an amplified amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode (Parag. 0008-0010). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation in order to enable high overall efficiency to be achieved. Sahlman discloses a multiplier (fig.3, item 120) for generating a multiplied signal to be transmitted to the high frequency power amplifier by multiplying a phase modulated signal by an amplitude modulated signal. (fig.3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a multiplier in order to implement related functions.

With respect to claim 3:

The rejection of claim 1 is incorporated, Heinonen further teaches a transmitting apparatus wherein an input level of the high- frequency power amplifier is changed according to an average output power of the transmitting signal in the first mode (col.3, line 47-56, col.4, line 40-56).

With respect to claim 4:

The rejection of claim 1 is incorporated, Heinonen further teaches a transmitting apparatus wherein an input level of the high- frequency power amplifier is changed according to an instantaneous output power of the transmitting signal in the first mode (col.3, line 47-56, col.4, line 40-56).

With respect to claim 6:

Heinonen further teaches a radio communication apparatus for transmitting a transmitting signal from an antenna by radio, wherein the transmitting signal is power amplified by the transmitting apparatus is outputted to the antenna (fig.1).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Otaka (Pub. No.: US 20060141964A1).

With respect to claim 2:

The rejection of claim 1 is incorporated; Heinonen, Sander and Sahlman did not teach multiplier and variable gain amplifier. Otaka teaches multiplier disposed before power amplifier and a variable gain amplifier disposed before the multiplier and in the second mode, amplitude modulates the signal by the multiplier (fig.5, Parag.0052). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have multiplier and variable gain amplifier in order to amplify and combine the signals before reaching the output.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Sahlman (Patent No.: US 6002923) and Admitted Prior art henceforth “Admission”.

With respect to claim 5:

Heinonen discloses a method of controlling a transmitting power when a transmitting signal is power amplified and outputted by a high-frequency power amplifier, the method

comprising the steps of: operating the high-frequency power amplifier as a nonlinear amplifier (col. 4, line 12-25) in a first mode to amplitude modulate the transmitting signal and to control an average output level of the transmitting signal by a power supply voltage of the high-frequency power amplifier (col.4, line 12-25), wherein said power supply voltage in the first mode is based at least in part on the amplitude-modulated signal separated from the base-band modulated signal; operating the high-frequency power amplifier as a linear amplifier in a second mode (col.4, line 23-39) and before the high-frequency power amplifier, controlling an average output level of the transmitting signal and amplitude modulating the transmitting signal having the average output level controlled. Heinonen did not teach separating means for separating phase and amplitude modulated signal and amplifying the amplitude modulated signal separated from the baseband modulated signal with an amplitude modulated signal amplifier; supplying the amplified amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode; transmitting from the amplitude-modulated signal amplifier a substantially constant voltage to be delivered as the power supply voltage to the high-frequency amplifier operating in the second mode

Admission discloses a separating means (fig. 5, item 21) for separating a baseband amplitude- modulated signal amplifying the amplitude modulated signal separated from the baseband modulated signal with an amplitude modulated signal amplifier (fig.5) and supplying the amplified amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode; transmitting from the amplitude-modulated signal amplifier a substantially constant voltage to be delivered as the power

supply voltage to the high-frequency amplifier operating in the second mode ((Parag. 0008-0010). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have amplitude/phase separating means in order to separate the amplitude and phase modulated signal before transmission.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Sahlman (Patent No.: US 6002923), Sander (Pub. No.: US 2005/0048935A1) and Camp (Patent No.: US 6295442B1).

With respect to claim 7:

The rejection of claim 1 is incorporated; Heinonen, Sahlman and Sander did not disclose a low limit limiting circuit operable in the first mode to establish a minimum value of the amplitude modulated signal to maintain operation of the high-frequency power amplifier as the nonlinear amplifier. Camp discloses amplitude limiter (fig.5, item 44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a limiter in order to maintain the operation of high frequency amplifier

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Admitted Prior art henceforth “Admission”.

With respect to claim 8:

Heinonen discloses a transmitting apparatus that power-amplifies a transmitting signal, the apparatus comprising transmitting power amplifying means (fig.1, item 10, 12) having a high-frequency power amplifier, wherein the transmitting power amplifying means has a first mode of operating the high-frequency power amplifier as a nonlinear amplifier (col.4, line 12-25) and a second mode of operating the high-frequency power amplifier as a linear amplifier (col.4, line 26-39), and in the first mode, amplitude modulates the transmitting signal and controls an average output level of the transmitting signal by a power supply voltage of the high-frequency power amplifier and, in the second mode, controls an average output level of the transmitting signal before the high-frequency power amplifier and amplitude modulates the transmitting signal having the average output level controlled (col.3, line 61-col.4,line56). Heinonen did not disclose amplitude and phase separator for separating a base-band modulated signal into an amplitude- modulated signal and a phase-modulated signal; and an amplifier for amplifying the amplitude- modulated signal and to generate an amplitude amplified signal and to be delivered as supply power to the high-frequency amplifier in the first mode wherein the amplifier supplies a substantially constant voltage to the high frequency amplifier in the second mode. Admission discloses Amplitude and phase separating means (fig.5, item 21) and amplifier for amplifying amplitude modulated signal (fig.5, item 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have amplitude/phase separating means and amplifier in order to separate the amplitude and phase and in order to amplify the amplitude modulated signal before transmission. Sander discloses a method of supplying a

Art Unit: 2618

substantially constant power supply voltage to the high-frequency amplifier in the second mode (Parag. 0008-0010). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation of Sander in order to enable high overall efficiency to be achieved.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1, 5 and 8 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJIBOLA AKINYEMI whose telephone number is (571)270-1846. The examiner can normally be reached on monday- friday (8.30-5pm) Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, YUWEN PAN can be reached on (571) 272-7855. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA  
/Yuchen Pan/  
Primary Examiner, Art Unit 2618